Integrated Contingency Plan (ICP)

National Aeronautics And Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

May 2001

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

Page No.

APPENDICES

1.0 PURPOSE

This Integrated Contingency Plan (ICP) combines requirements and provides for the implementation of:

- Spill Prevention, Control, and Countermeasures Plan (SPCC), as required by Title 40 of the Code of Federal Regulations (CFR), Part 112 and by Virginia Administrative Code (VAC) 9 VAC 25-91-170;
- Hazardous Substance Contingency Plan, as required by 40 CFR 262.34 (which references 40 CFR 265, Subpart D) and 9 VAC 20-60-265;
- Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120; and
- Storm Water Pollution Prevention Plan (SWPPP) required by 9 VAC 25-31-120 pursuant to the current Virginia Pollutant Discharge Elimination System (VPDES) General Permit #VA0024457;

for the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's (GSFC) Wallops Flight Facility (WFF) located at Wallops Island, on the Eastern Shore of Virginia.

The purpose of this plan is to minimize hazards to human health and the environment from fires, explosions, or from any unplanned, sudden, or gradual releases of oil or hazardous substance to the air, soil, surface water, or sanitary sewer system at the facility. This will be accomplished by a coordinated effort involving the WFF Fire Department, Environmental Office, and Facility Management Branch; along with outside contractors, the Virginia Department of Environmental Quality (DEQ), and the U. S. Environmental Protection Agency (EPA).

2.0 SCOPE

This ICP has been developed for the facility and is applicable to:

- Potential releases of petroleum products from all aboveground storage tanks (AST's), underground storage tanks (UST's), and all other petroleum product containing equipment on the facility's property;
- Wallops Flight Facility's hazardous waste accumulation areas at Buildings B-29, N-223, E-2, and U-81;
- Emergency response to hazardous substance spills on the facility property; and
- The Open Burn/Open Detonation (OB/OD) Site on Wallops Island.

The provisions of this plan are to be implemented immediately whenever:

- There is any release of oil on the facility; or
- There is a fire, explosion, or release of a hazardous substance, which could threaten human health or the environment.

3.0 FACILITY DESCRIPTION

3.1 INSTALLATION HISTORY

Wallops Flight Facility was established in 1945 as a center for aeronautic research. Currently, the mission includes space science, earth science, communications, and data processing. The facility is federally owned with office buildings, launch ranges, and an airport. Historically and today, rocket launches, testing of aircraft, and other experiments are performed at WFF.

3.2 LOCATION

Wallops Flight Facility is located in Accomack County on the Eastern Shore of Virginia. Accomack County is bordered by Northampton County on the south, the state of Maryland on the north, the Atlantic Ocean on the east, and the Chesapeake Bay on the west. Accomack County is a part of the Delmarva Peninsula which is also bordered on the east and west by the Atlantic Ocean and the Chesapeake Bay, and by the Delaware Bay and River on the north.

The facility is composed of three separate land areas in close proximity to each other, the Main Base, Mainland, and Wallops Island. The Main Base encompasses 2,230 acres (902 hectares) and includes runways, aircraft hangars, office buildings, dormitories, and industrial shops (refer to Map 1 in Appendix I). Most administrative, technical, and facility support functions occur on the Main Base. The Main Base is bordered on the east by extensive marshland and creeks, which lead into Chincoteague Bay and Chincoteague Inlet. Little Mosquito Creek and its estuaries define the north and west borders of the Main Base. State routes 175 and 798 border the Main Base on the south and southeast, respectively.

The Mainland facilities include radar, antennae, and transmitter systems and associated buildings. The 100 acres (40 hectares) of the Mainland area are bordered by extensive marshland to the east, and by farmland to the south, west, and north.

Wallops Island is a barrier island located along Virginia's coast. It encompasses approximately 4,200 acres (1,700 hectares) surrounded by water and is approximately 7 miles (11 kilometers) long by 1/2-mile (0.8 kilometers) wide. Testing and launch facilities, storage buildings, and office buildings, which are utilized by NASA and its partners, are located on Wallops Island. The Atlantic Ocean borders Wallops Island to the east and the Chincoteague Inlet delineates the northern border. Marshland, interlaced with small creeks, covers the entire western approach to Wallops Island. The north end of Assawoman Island abuts the southern tip of Wallops Island.

3.3 LAND RESOURCES

The topography of the facility and the surrounding area is of the Mid-Atlantic coastal region, and is generally flat with no significant contour deviations (refer to Maps 1 and 2 in Appendix I). The maximum elevation on the Main Base is approximately 40 feet (12.2 meters) above mean sea level (MSL). The Mainland consists of flat areas with gradual eastern slopes leading to the tidal marsh. The elevation of the Mainland reaches approximately 20 feet (6.1 meters) above MSL. The topography on the barrier islands changes due to the dynamics of the ocean currents and weather conditions. Presently, the highest elevation on Wallops Island is approximately 15 feet (4.6 meters) above MSL.

The soils at the facility are the level, acidic, sandy soils of the Eastern Shore Coastal Plains. Groundwater in the immediate vicinity consists of an unconfined water table aquifer (Columbia) and one major confined aquifer (Yorktown).

The Main Base has both natural drainage patterns and storm water drains to intercept and divert flow. The natural drainage pattern on the northern portion of the Main Base drains to Little Mosquito Creek, which flows to the Atlantic Ocean. The eastern and southeastern portions of the Main Base have a natural drainage pattern that flows to Simoneaston Bay, then into Cockle Creek, Shelly Bay, and Chincoteague Bay, which drains to the Atlantic Ocean. The natural drainage pattern on the western and southwestern portions of the Main Base is toward Wattsville Branch, then to Little Mosquito Creek, and on to the Atlantic Ocean. Storm water drains, located throughout the developed portion of the Main Base, intercept natural drainage patterns and divert the flow to numerous discharge locations or outfalls. The majority of the outfalls discharge into the surrounding waterways and eventually to the Atlantic Ocean. Map 3, of Appendix I, show the locations of the storm water drains and the outfalls.

On the Mainland, the eastern sloping grade forms a natural drainage pattern that flows to Hog Creek and then to Oyster Bay, Assawoman Creek, and the Atlantic Ocean. Surface water on Wallops Island flows west through numerous tidal tributaries then subsequently flows to the Atlantic Ocean. A section of the Intracoastal Waterway is located west of Wallops Island and east of the Main Base and Mainland. Wallops Island also has storm drains that divert sheet flow to three individual outfalls.

3.4 AVERAGE WEATHER

The annual average high daily temperature is 65°F (18°C) and the average annual daily low is 48°F (9°C). The extreme low daily temperature is -4°F (-20°C), the extreme high daily temperature is 101°F (38°C). The average annual rainfall is 39 inches

(99 centimeters). The highest recorded wind speed is 78 mph (125 kph); however, the average prevailing wind speed is 20 mph (32 kph). The facility is in Seismic Zone 1 (minor seismic probability) and is susceptible to severe thunderstorms.

3.5 UTILITIES

Six miles (9.5 kilometers) of state maintained road connect the Main Base and Mainland. The facility owns a paved road, bridge, and causeway, which connect the Mainland and Wallops Island. These structures provide the only land link to Wallops Island and are a critical part of the NASA infrastructure. Hard surface roads, maintained by facility personnel, connect the structures located within the Main Base, Wallops Island, and the Mainland.

The Wattsville Substation of Conectiv Power Delivery (Conectiv) supplies electrical power to the facility. Separate lines connect to the Main Base and the Mainland/ Wallops Island area. During high demand (low voltage) periods, the facility supplements electricity with generators as part of a local peak load reduction program. The Facilities Management Branch (FMB) operates backup power generators when either Conectiv's service is not sufficient or short-term power services throughout the facility are needed for special projects. In addition, the National Oceanic and Atmospheric Administration (NOAA), a Wallops Flight Facility partner, has an auxiliary power source in the event of an outage, and also participates in the local peak load reduction program.

All potable water on the facility is obtained from groundwater production wells with depths of 150 feet (61 meters) to 250 feet (80 meters). Groundwater withdrawal, usage, and quality are regulated by the DEQ and by the Commonwealth of Virginia Department of Health. The water is used for domestic purposes and in municipal activities including laboratories, projects, and fire protection. In addition to NASA, the Town of Chincoteague, Virginia, maintains potable water wells located on the facility property, which range in depth from 100 feet (32 meters) to 262 feet (84 meters).

The Main Base wells are interconnected in a water supply piping system that, after chlorination, feeds the 500,000 gallon (1.9 million liter) ground-level storage reservoir (D-45). Water from this reservoir is pumped into the distribution system. A 150,000 gallon (520,000 liter) elevated storage tank rides the system, maintaining pressure and supplying short term demand. The chlorination facility has a capacity of approximately 1 million gallons per day (gpd) or 3,785,000 liters per day (lpd).

Potable water for the Mainland and Wallops Island is supplied from two wells with a combined potential capacity of 100,000 gpd (350,000 lpd). Two 150,000 gallon (520,000 liter) elevated storage tanks (X-45 and W-55) and a 100,000 gallon (350,000 liter) elevated storage tank (V-90) are on Wallops Island. An 80,000 gallon (300,000-liter) ground-level reservoir (U-49) on the Mainland is a fully operational storage facility. The chlorination facility, located on the mainland (U-50), has a capacity of approximately 175,000 gpd (660,000 lpd).

The Main Base is served by a system of gravity sewers, pumping stations, and force mains connected to a Federally Owned Treatment Works (FOTW). The FOTW has a treatment capacity of 300,000 gpd (1,135,624 lpd). The Wallops Visitor Center is served by a separate dedicated septic system. Sewage on the Mainland discharges to septic tanks. Sewage at Wallops Island is collected by gravity sewers, pumping stations and force mains with the exception of five sites on the north end that make use of septic systems. Sewage is then transported by a force main to the Main Base, (refer to Maps 4 and 5 in Appendix I for schematics of the sanitary sewer system).

3.6 PETROLEUM STORAGE AND POTENTIAL SPILLS

Wallops Flight Facility owns and operates 50 AST's and 21 UST's of various sizes located throughout the facility. This capacity represents:

- 250,000 gallons (870,000 liters) of #6 fuel oil (aboveground)
- 144,000 gallons (545,000 liters) of JP-5 and JPTS, jet fuel, combined (underground and mobile)
- 119,180 gallons (451,150 liters) of #2 fuel oil (aboveground and underground)
- 16,080 gallons (60,870 liters) of waste oil (underground)
- 14,050 gallons (53,185 liters) of diesel fuel (aboveground, underground, and mobile)
- 10,300 gallons (35,700 liters) of gasoline (underground and mobile)
- 10,000 gallons (34,600 liters) of off specification fuel (underground)
- 275 gallons (950 liters) of kerosene (aboveground).

The total oil storage capacity at the facility, including partners, is summarized in Table 1. The maximum storage capacity of AST's is 338,210 gallons (1,280,264 liters) of fuel. The maximum storage capacity of UST's is approximately 196,195 gallons (742,680 liters) of fuel. UST's primarily store motor vehicle fuel, aircraft fuel, and heating fuel for buildings.

D-102 and D-103 on the Main Base store #6 fuel oil for heating and are operated together as a system. They have a combined storage capacity of 250,000 gallons (946,350 liters). Two 20,000 gallon (69,200 liters) AST's (D-9A and D-9B) are used to store #2 fuel oil for Building D-8, the Central Heating Plant on the Main Base.
Tables 2A through 2D provide a complete inventory of the facility's oil storage systems. Maps 6 and 7 of Appendix I depict the locations of the oil storage tanks. In addition to the oil storage systems maintained at the facility, outside construction contractors occasionally bring portable aboveground storage tanks, of varying capacities, onto the facility for the duration of their contract. Prior to commencing work, these contractors are required to submit, for approval, an accident prevention plan to the Wallops Environmental Office. Contractors bringing an AST with a capacity greater than 1,100 gallons (4,165 liters) must include in the accident prevention plan proof that the tank is registered with the DEQ. Possible releases from these tanks must be addressed

in the contractor's Hazardous Materials Spill Plan. Environmental regulations require that contractors provide 110 percent capacity, impermeable secondary containment for all AST's brought onto the facility by the contractor.

The following tables summarize the total oil storage capacity at the facility including storage by partners. Table 1 summarizes the total oil storage by oil type. Table 2A is a summary of all AST's, Table 2B is a summary of all UST's, Table 2C is a summary of underground oil water separators, and Table 2D summarizes mobile storage tanks.

TABLE 1:
WALLOPS FLIGHT FACILITY OIL STORAGE SUMMARY

Oil Commodity	Storage Type			Total Storage Capacity (gallons)
	AST	UST	Mobile	
#2 Fuel Oil	✔	✔		119,180
#6 Fuel Oil	✔			250,000
JP-5 and JPTS Jet Fuel		✔	✔	144,000
Diesel Fuel	✔	✔	✔	14,050
Gasoline		✔	✔	10,300
Kerosene	✔			275
Off-spec. Fuel		✔		10,000
Waste Oil		✔		16,080

TABLE 2A:
WALLOPS FLIGHT FACILITY ABOVEGROUND STORAGE TANKS

Tank Identification #	Contents	Capacity (gallons)	Status	Year Installed
B-31[1]	#2 Fuel Oil	1,496	Active	1994
B-130[1]	#2 Fuel Oil	1,000	Active	1991
D-4A[1]	Diesel	500	Active	1992
D-4B[1]	Diesel	500	Active	1992
D-8B	Diesel	550	Active	1991
D-9A[1]	#2 Fuel Oil	20,000	Active	1993
D-9B[1]	#2 Fuel Oil	20,000	Active	1993
D-50B[3]	Diesel	1,000	Active	1999
D-102[2]	#6 Fuel Oil	125,000	Active	1952
D-103[2]	#6 Fuel Oil	125,000	Active	1998
E-4[1]	#2 Fuel Oil	4,000	Active	1987
E-134[1]	#2 Fuel Oil	1,000	Active	1992
F-20[1]	#2 Fuel Oil	1,000	Active	1992
F-24[1]	#2 Fuel Oil	550	Active	1991
J-18[1]	#2 Fuel Oil	1,000	Active	1992

TABLE 2A: WALLOPS FLIGHT FACILITY ABOVEGROUND STORAGE TANKS				
Tank Identification #	**Contents**	**Capacity (gallons)**	**Status**	**Year Installed**
Lift Station[3]	Diesel	500	Active	1998
M-1A[1]	#2 Fuel Oil	500	Active	1992
M-1B[1]	#1 Kerosene	275	Active	1981
M-17A[1]	#2 Fuel Oil	1,000	Active	1992
M-19A[1]	#2 Fuel Oil	1,000	Active	1992
M-21A[1]	#2 Fuel Oil	1,000	Active	1992
N-116[1]	#2 Fuel Oil	1,000	Active	1992
N-162[1]	#2 Fuel Oil	550	Active	1992
N-224[1]	#2 Fuel Oil	1,000	Active	1992
U-12	Diesel	2,000	Active	2001
U-30B[1]	#2 Fuel Oil	3,200	Active	1993
U-48[1]	#2 Fuel Oil	500	Active	1992
U-55[1]	#2 Fuel Oil	542	Active	1992
U-65[1]	#2 Fuel Oil	500	Active	1992
U-70[3]	#2 Fuel Oil	1,000	Active	2001
V-24A[3]	#2 Fuel Oil	2,000	Active	2002
V-24C[1]	Diesel	150	Active	1997
V-45B[1]	#2 Fuel Oil	548	Active	1992
V-50[1]	#2 Fuel Oil	395	Active	1992
V-55B[1]	#2 Fuel Oil	537	Active	1992
W-15A[1]	#2 Fuel Oil	1,040	Active	1960
W-20A[1]	#2 Fuel Oil	2,450	Active	1960
W-20[1]	#2 Fuel Oil	275	Active	1992
W-40B[1]	#2 Fuel Oil	1,030	Active	1960
W-65C[1]	#2 Fuel Oil	4,000	Active	1962
W-100A[1]	#2 Fuel Oil	974	Inactive	1963
X-15[1]	#2 Fuel Oil	2,000	Active	1987
X-35[1]	#2 Fuel Oil	1,000	Active	1994
X-75B[1]	#2 Fuel Oil	1,000	Active	1990
X-85[1]	#2 Fuel Oil	1,000	Active	1994
Y-15A[1]	#2 Fuel Oil	2,026	Active	1978
Y-55[1]	#2 Fuel Oil	275	Active	1992
Y-60A[1]	#2 Fuel Oil	1,000	Active	1992
Z-41B[1]	#2 Fuel Oil	2,097	Inactive	1975

Total Aboveground Oil Storage Capacity: 338,210

[1]Indicates tanks surrounded by dikes designed to contain 110% of the total tank volume.
[2]Indicates tanks surrounded by an earthen berm with a Bentonite clay liner.
[3]Indicates double-walled tanks.

TABLE 2B: WALLOPS FLIGHT FACILITY UNDERGROUND STORAGE TANK				
Tank Identification #	**Contents**	**Capacity (gallons)**	**Status**	**Year Installed**
D-37-1[1]	JP-5 Fuel	20,000	Active	1982
D-37-2[1]	JP-5 Fuel	20,000	Active	1982
D-37-3[1]	JP-5 Fuel	20,000	Active	1982
D-37-4[1]	JP-5 Fuel	20,000	Active	1982
D-37-5[1]	JP-5 Fuel	20,000	Active	1982
D-37-6[1]	JPTS Fuel	10,000	Active	1992
D-37-7[1]	JPTS Fuel	10,000	Active	1992
D-37-8[1]	OffSpec Fuel	10,000	Active	1992
D-37-9[1]	Waste Oil	12,000	Active	1992
F-26-1	Unleaded	10,000	Active	1985
F-26-2	Diesel	10,000	Active	1985
M-22A	#2 Fuel Oil	550	Active	1992
N-161	#2 Fuel Oil	4,220	Active	1986
N-162	#2 Fuel Oil	3,425	Active	1986
R-30[2]	#2 Fuel Oil	3,000	Active	1993
CDF[2] (R-20)	#2 Fuel Oil	3,000	Active	1987
BEQ[2] (R-20)	#2 Fuel Oil	3,000	Active	1987
V-10-1[2]	#2 Fuel Oil	3,000	Active	1995
V-20[2]	#2 Fuel Oil	2,000	Active	1989
NOAA-1[3]	#2 Fuel Oil	6,000	Active	1997
NOAA-2[3]	#2 Fuel Oil	6,000	Active	1997

Total Underground Oil Storage Capacity: 196,195 active

[1]Indicates tanks in the aviation fuel farm.
[2]Indicates tanks maintained by the Department of the Navy.
[3]Indicates tanks maintained by National Oceanic and Atmospheric Administration.

TABLE 2C: UST OIL/WATER SEPARATORS				
Tank Identification #	**Contents**	**Capacity (gallons)[1]**	**Status**	**Year Installed**
D-33	Water/Oil	4,015/80	Active	1982
D-1	Water/Oil	6,000/4,000	Active	1991

[1]Refers to the capacities of water to oil; i.e., D-33 holds 4,015 gallons (151,200 liters) of water and 80 gallons (300 liters) of oil.

TABLE 2D: MOBILE OIL STORAGE SYSTEMS (VEHICLE FUELING)		
Tag Number	**Contents**	**Capacity (gallons)**
NA-8180	Unleaded Gasoline Diesel Fuel	300 1100
NA-8280	JP-5 Fuel	5,000
NA-8065	JP-5 Fuel	3,000
NA-8147	JP-5 Fuel	6,000
NA-8265	JP-5 Fuel (Defueler)	5,000
NA-8333	JPTS	5,000
NA-8482	Empty	5,000

3.6.1 Facility Transfer Operations

Wallops Flight Facility does not transfer bulk oil but maintains a service station at Building F-26. The service station area contains a 10,000 gallon (34,600 liter) UST for diesel fuel and a 10,000 gallon (34,600 liter) UST for unleaded automotive gasoline. The new aviation fuel storage area, D-37, contains eight UST's for the storage of jet fuel and one UST for the storage of waste oil from the oil/water separator. Mobile tankers transfer the aviation fuel from the D-37 storage area to aircraft around the hangars D-1 and N-159.

3.6.2 Vehicles

Automotive fuel is transported by fuel trucks from the Main Base, on a weekly basis, to service the vehicles on Wallops Island and the Mainland. These vehicles include the fire department fleet, heavy equipment, and emergency power generators.

3.7 HAZARDOUS WASTE ACCUMULATION AREA

The facility maintains four separate Less-Than 90-Day Hazardous Waste Accumulation Areas operating under two EPA Generator Identification Numbers. The EPA Generator Identification Number for the Main Base is VA8800010763 and VA7800020888 for the Mainland/ Wallops Island. Both areas are classified as large quantity generators since NASA generates greater than 2,200 pounds (1,000 kg) of hazardous waste and/or 2.2 pounds (1 kg) of acute hazardous waste per month at each location. Hazardous waste at the accumulation areas can be stored onsite for up to 90 days after the date of initial accumulation.

Building B-29 is the primary accumulation area designated for the storage of hazardous wastes, which are generated on the Main Base. Building B-29 is located in the vicinity of the following buildings:
Building B-30, the hazardous materials storage facility, to the southwest;
Building B-31, a general warehouse, to the northwest;
Building B-129, the Main Base Fire Station, to the north; and

Building E-10, the Old Aviation Fuel Tank Farm Pump and Treat remediation system, to the northeast.

The layout of Building B-29 is depicted in Figure 1. Building B-29 is locked when personnel are not present. The building consists of the following areas:

An open bay, which provides eight waste cubicles separated by 56-inch (142-centimeter) high concrete walls. The bay also provides a staging area and an aisle between the waste cubicles.

- A storage room for equipment, supplies, and sorbent spill materials.
- An office, restroom, and an utility panel closet.
- A concrete loading dock and ramp, equipped with a manual dock leveler.
- An outside covered storage area, surrounded by a chain link fence.

In addition, the design of the accumulation area includes the following features:

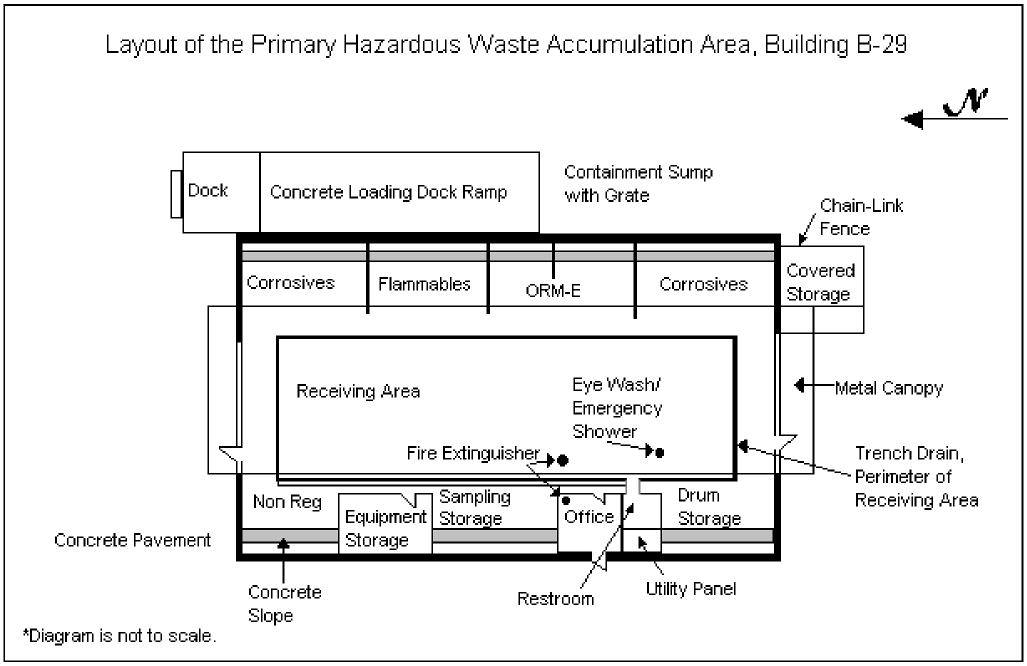
- A fire alarm system connected to the Main Base Fire Station.
- Explosion relief venting and skylights.
- An electrical ground system.
- An eye wash station and emergency shower.
- A sprinkler fire suppression system designed to release 0.35 gpm/ft^2 (1,425 lpm/m^2).
- Fire extinguishers located in the receiving area and office.
- The floor in the waste cubicles sloped toward a 4 feet (1.2 meters) wide containment sump and grate, which is adjacent to the exterior wall of the cubicles.
- A trench drain surrounding the perimeter of the receiving area.

Building N-223, on the southern portion of the Main Base, houses one of the Less-Than 90-Day Hazardous Waste Accumulation Areas. Currently, only used oil is stored in Building N-223. It is adjacent to the surplus/disposal facility, Building N-222. Building N-223 is surrounded by chain-link fencing and is secured at all times. It is an open-air facility with a roof. Features include an eyewash station, emergency shower, fire extinguisher, and a containment sump and grate.

Building E-2 also contains one of the Less-Than 90-Day Hazardous Waste Accumulation Areas on the Main Base. It is primarily used for storing photography wastes. Features include an eye wash station, emergency shower, fire extinguisher, and a containment sump. The area is locked after the facility's primary hours of operation.

The hazardous waste generated on the Mainland and Wallops Island is stored at Mainland/Wallops Island Less-Than 90-Day Hazardous Waste Accumulation Area, Building U-81. Like Building N-223, Building U-81 is an open-air facility with a roof surrounded by chain-link fencing. It is secured at all times. Features include an eyewash station, emergency shower, fire extinguisher, and a containment sump and grate.

Figure 1:
Layout of the Primary Hazardous Waste Accumulation Area Building B-29



3.8 TREATMENT, STORAGE, AND DISPOSAL FACILITY (TSDF)

The Open Burn/Open Detonation (OB/OD) area is maintained as a Treatment, Storage, and Disposal Facility (TSDF), on the southern end of Wallops Island. The OB/OD area is used for the thermal destruction of rocket motors and associated components, which upon preflight inspection fail to meet launch specifications. These rocket motors are stored in an explosive storage area, reevaluated, and then destroyed in the OB/OD unit. The rocket motors are treated at the facility by open burning until the casings are free of contamination. Both single-base and multibase propellants are considered nonlisted hazardous wastes because of their reactivity. Thermal treatment volatilizes these propellants, rendering the rocket motors nonhazardous. The OB/OD area is operated on an infrequent basis, with thermal treatment occurring a few days per year. The OB/OD area is currently operating under EPA interim status pending approval of a Resource Conservation and Recovery Act (RCRA) Part B permit for Subpart X-Miscellaneous Units.

The OB/OD area is located on the shoulder of a 12-foot (3.6-meter) wide asphalt access road. The location is shown in Figure 2. The area consists of three cylinders embedded in the ground and one open burn pad assembly. The cylinders are aligned parallel to the roadway at a distance of 3 to 5 feet (0.9 to 1.5 meters) from the road berm. The steel cylinders vary from 17.5 to 23 inches (44.5 to 58.4 centimeters) in diameter and from 4.0 to 5.5 feet (1.2 to 1.7 meters) in height above the ground surface. The cylinders are installed to a depth of 2.4 to 5.0 feet (0.7 to 1.5 meters) below ground surface. The concrete bottom of each cylinder prevents contact between propellant constituents and subsurface soils. The cylinders are covered when not in use to prevent accumulation of debris and precipitation.

The OB/OD area was upgraded in July 1997 to accommodate larger rocket motors that exceed the capabilities of the existing embedded cylinder configuration. The upgrade included the installation of a concrete pad and a retention device to secure the inverted rocket motors to the pad. The location of the new OB/OD pad is approximately 10 feet (3 meters) north of the existing embedded cylinders. The facility will continue to use both configurations for the thermal destruction of rocket motors.

Rocket motor propellants and igniters are thermally treated at the OB/OD unit within the rocket motor or igniter casing, which serves as a primary containment device. The rocket motor or igniter casing is placed inside one of the steel cylinders, which serves as a secondary containment device. The cylinders are designed to hold the motors or igniters in an inverted position to ensure that the motors and igniters are isolated from the ground during treatment.

The primary combustion products resulting from the thermal treatment process are the same as the products resulting from the launch of rockets containing these motors. These primary combustion products include carbon monoxide, carbon dioxide, water, nitrogen, hydrogen, hydrogen chloride, aluminum oxide, and lead.

Standard Operating Procedures (SOP's) exist for each type of rocket motor and are guidelines for thermal treatment of rocket motors and igniters at the OB/OD area. Copies of each SOP are contained in the OB/OD Facility RCRA Part B Permit Application. The OB/OD Contingency Plan is located in Appendix G of this document.

Figure 2:
OB/OD Unit (south end of Wallops Island)

3.9 SECURITY

All fuel oil storage tanks are located in areas where access is limited to government employees, contractors, and registered visitors. Drainage valves, for all secondary containment structures around the oil storage tanks, remain closed and locked when not in use. The facility is surrounded by a chain link security fence topped with barbed wire, and entrance gates are manned by a security force or locked at all times. In addition, security personnel patrol the facility on a regular schedule.

3.10 TRAINING

Facility personnel involved in oil transfer operations undergo annual training in proper management of oil, including the elements of this ICP. Fire Department personnel are certified in Hazardous Material Operations through the Commonwealth of Virginia Department of Fire Programs in compliance with National Fire Prevention Association NFPA 472-3-1 through 6, HazMat Competencies. Members of the Environmental Office are certified through 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training as required by the Occupational Safety and Health Act (OSHA) by 29 CFR 1910.120. On an annual basis, the Environmental Office and the Fire Department conduct field training and equipment testing. Field training includes instituting emergency spill procedures on simulated releases as well as locating and properly using spill response kits. The Facilities Management Branch provides personnel for the remediation of minor storage tank leaks. Spill response personnel are additionally properly trained and certified in Hazardous Materials (HAZMAT), including participation in annual 8-hour refresher HAZWOPER skills training.

In accordance with the Spill Prevention, Control and Countermeasures (SPCC) requirements of 9 VAC 25-91-130, tank inspectors are trained in:

- Basic hazard recognition, personal protection, and facility operation.
- Procedures for conducting daily visual and weekly facility inspections.
- Procedures to follow upon recognition of a hazard or potential hazard.
- Procedures for evaluating the condition of the aboveground storage tanks.

3.11 EMERGENCY RESPONSE

Wallops Flight Facility has in-house resources to initiate containment and cleanup efforts for small-scale oil or hazardous substance releases. When a release occurs, the Fire Department responds to emergencies and commences standard emergency response protocols. Next, the Fire Department evacuates personnel from the affected area and evaluates the situation for potential fire hazards. Finally, the Fire Department begins containment and cleanup efforts. Based on the topography of the area, the general flow direction of a spill is determined. The Fire Department uses containment devices to inhibit petroleum from entering storm drains or surface water. Devices at their disposal include: storm drain dikes (magnetic and liquid impervious barriers), petroleum absorbing materials, drain plugs and drain mats, sorbent socks and booms, backhoes, and hand shovels. If necessary, any or all of these may be used to create an impervious berm.

In the event that fuel enters a storm drain, the Fire Department is capable of setting up underflow dams, filter dams, and floating skimmers at the storm drain outfall to prohibit further migration of petroleum down stream. The Fire Department will contact the Environmental Coordinator (a designee of the Environmental Office), immediately, for assistance in coordinating containment and cleanup activities. The Environmental Coordinator will notify the appropriate federal, state, and local authorities within the required timeframes.

The Environmental Coordinator provides technical assistance in matters of environmental protection and regulatory notification issues (see Appendix A for notification forms). In the event that the Fire Department is unable to effectively control a release, the facility will retain the services of a qualified response contractor. The Environmental Office currently has agreements with several spill response contractors who are approved by the Commonwealth of Virginia (Appendix D).

4.0 SPILL PREVENTION AND CONTROL

In order to reduce the potential for petroleum spills to enter waters of the state, the facility has developed and implemented various spill prevention and control measures. These measures include both engineered and operational controls for AST's and UST's. The following sections describe these measures in detail.

4.1 ENGINEERED SPILL PREVENTION AND CONTROL

All AST's at the facility are either double walled or are positioned within impervious concrete dikes capable of containing at least 110% of the volume of the largest tank within each dike. Table 2A provides a listing of the AST's located at the facility and identifies the AST's that are positioned within dikes.

In addition to these dikes, spill containment is provided for the transportation vehicles during filling operations at the aviation fuel tank farm. The fuel truck loading area is bermed and the storm drain system located in the fueling area is routed through an oil/water separator. The oil/water separator is connected to a 12,000 gallon (415,200 liter) UST that captures and temporarily contains released petroleum. Table 2C contains information on the oil/water separators.

The UST's in the aviation fuel tank farm (D-37-1 through D-37-9) and at the gasoline station (F-26-1 and F-26-2) are monitored by a soil vapor extraction system linked to computerized alarms. The UST's at NOAA (NOAA-1 and NOAA-2) are equipped with interstitial leak detection systems that perform leak testing and transmit inventory and alarm response information to a continuous monitoring system.

4.2 OPERATIONAL SPILL PREVENTION AND CONTROL

In addition to engineering controls, the facility maintains the ICP as the primary tool to define operational controls for the management of oil and hazardous waste accumulation operations. The ICP integrates the components of the SPCC Plan (in accordance with EPA's Oil Pollution Prevention requirements and Virginia's 9VAC 25-91-170) and the Hazardous Substance Contingency Plan (in accordance with EPA's Hazardous Waste Accumulation requirements and Virginia's 9VAC 20-60-265). This ICP is a "living document" that has been endorsed by all the facility partners; it defines the facility's management practices for maintenance, emergency, and normal operational phases. The ICP is maintained at the facility and distributed to all major facility stakeholders, local police departments, fire departments, hospitals, and emergency response teams that may be called upon to provide emergency services.

Contracted distributors fill the fuel oil storage systems, under supervision of the facility owner/operator. To minimize releases, NASA requires that all fueling contractors exercise caution during fuel transfer operations. In accordance with U. S. Department of Transportation regulations, all fuel transporters must maintain an emergency spill containment kit on the transport vehicle. Contractors are responsible for containment, cleanup, and disposal of any releases that may occur during fuel transfer operations. As an additional preventive measure, spill kits are located adjacent to every AST that contains at least 2,000 gallons (7,570 liters) of fuel oil.

The UST's are routinely inspected for release detection by groundwater monitoring, soil vapor monitoring, or tightness testing. Four groundwater monitoring wells are installed in the fenced area of UST's D-37-1 through D-37-8. These monitoring wells are equipped with either hydrocarbon vapor sensor probes or hydrocarbon liquid/water sensor probes, and are monitored for release detection by the Wallops Logistics Team. In addition to groundwater monitoring, a comprehensive electronic integrated continuous monitoring system is utilized for tank inventory management and leak detection. UST's F-26-1 and F-26-2 are inspected on a continual basis for release detection by the Logistics Team, using electronic soil vapor monitoring. A "stick test" is also performed daily to assure that the physical quantity remaining within the tank reflects the dispensed amount indicated from pump metering.

Emergency response protocols for oil releases, hazardous substance spills, fires, and explosions are found in 205.W-WI-1040.Y.5 and Y.6 located in Appendix A of this document. The following Work Instructions are implemented to reduce the potential for the release of petroleum to the environment and ensure that the facility performs and documents the necessary activities required for compliance (see Appendix E). These Work Instructions are summarized as follows.

205.W-WI-8870.Y.1, Refueling Oil Storage Tanks, outlines procedures to be followed to prevent spills during refueling operations, which include required oil inventory control measures.

205.W-WI-8870.Y.2, Maintenance/Inspection of Oil Storage Systems, specifies the necessary AST inspection requirements and the associated documentation. Copies of the oil storage tank descriptions are provided in Appendix B.

205.W-WI-8870.Y.3, Discharging Storm Water from Emergency Containment Areas, describes in detail the procedures necessary to ensure that contaminated storm water is not discharged from the emergency containment areas to waters of the Commonwealth. This Work Instruction also ensures that these discharges are appropriately documented.

205.W-WI-8870.Y.4, Disposal of Hazardous Waste and Used Oil, outlines the used oil management practices.

5.0 SPILL COUNTERMEASURES

Wallops Flight Facility has established countermeasures to be implemented during spill events. These countermeasures are to be executed in the event that established engineered and operational controls fail. They include: containment of spills, mitigation of the effects of spills which pose a threat to the waters of the Commonwealth, and restoration of affected areas.

Work Instruction 205.W-WI-1040.Y.5, Oil and Hazardous Substance Release Notification, (Appendix A), defines the actions to be taken, and the personnel to be contacted, in the event of a spill (depending on the magnitude of the spill and the time of day during which it occurs).

5.1 CONTAINMENT OF SPILLS AND MITIGATION OF EFFECTS

Countermeasures to contain and divert spills from entering waters of the Commonwealth include the following:

- Elimination of the source of the spill (i.e., shutting valves, banding piping, plugging ruptured tanks, etc.),
- Strategic placement of sorbent materials around or on top of spilled material,
- Placement of booms around proximate storm drain inlets and sanitary sewer manholes, and
- Construction of earthen dikes in the immediate area or downstream of the spill.
- Additional countermeasures include placement of floating booms near outfall and inlet structures to prevent spills that have entered the facility storm water systems from migrating off the facility property.

Work Instruction 205.W-WI-1040.Y.7, Containment of Oil Tank Releases, (Appendix A), describes the actions necessary to respond, contain, and localize an oil or hazardous substance release until the affected site can be decontaminated. If a spill is beyond the control of the Fire Department, outside contract support will be secured by the facility.

5.2 RESTORATION OF AFFECTED AREAS

To the extent practicable, the Fire Department and facility equipment will be utilized to restore (to comparable condition) any off-site property adversely affected by releases that originated on facility property. Restoration includes removal and subsequent replacement of contaminated soil, replanting of vegetation, restoration of stream banks, etc. Work Instruction 205.W-WI-1040.Y.8, Removal of Contained Oil Spill/Sheen, (Appendix A), specifies the procedures for proper cleanup and decontamination. When necessary, the facility will use external contractors to remediate large spills. Appendix D lists spill response contractors contacted by the Environmental Office.

For spills which remain on facility property, Wallops will restore affected areas to a degree deemed appropriate by the facility and the DEQ. The user/owner (i.e., the code, partner, or subcontractor) of the specific tank is responsible for the cleanup of a release, with coordination of the Environmental Office for reportable quantity spills.

6.0 WORST CASE SCENARIO

The worst case scenario for a facility, as defined in 9 VAC 25-91-170, Oil Discharge Contingency Plan, is “the instantaneous release of the volume of the largest tank on the facility (125% of the volume of the largest tank for facilities with multiple tanks within a single containment dike), during adverse weather conditions”. Additionally, historical data indicate that in the event of a catastrophic release of oil from an AST, the product will escape the secondary containment due to the wave-like action of the product when the tank fails. In determining the worst case spill for a multi-tank containment area, the following equation is recommended by DEQ:

Worst case discharge = (volume of the largest tank x 1.25) x 0.22 (the “slosh factor)

The largest tanks at the facility are two 125,000 gallon (432,500 liters) AST’s, D-102 and D-103, which contain #6 fuel oil. These tanks were not selected for the scenario due to the high viscosity of #6 fuel oil. Conversations with the state regulator confirmed the assumption that a #6 fuel oil spill would not constitute worst case. Therefore, the second largest tank on the facility, D-9A or D-9B, was considered for the worst case scenario.

The D-9A/D-9B AST spill scenario is the instantaneous release of the volume of either of these tanks, which each have a total capacity of 20,000 gallons (69,200 liters) of #2 fuel oil. A concrete secondary containment dike surrounds both D-9A and D-9B. The volume of the dike is approximately 64,227 gallons (222,225 liters), which is greater than the 110% containment criteria of 44,000 gallons (166,560 liters). Moreover, considering both tanks rupturing simultaneously, the dike area would be sufficient to contain the total volume released. All AST secondary containment structures at the facility were engineered in a similar fashion. However, utilizing the calculation for the "slosh factor", potentially 11,000 gallons (41,600 liters) of #2 fuel oil could spill over the secondary containment dike if both tanks rupture.

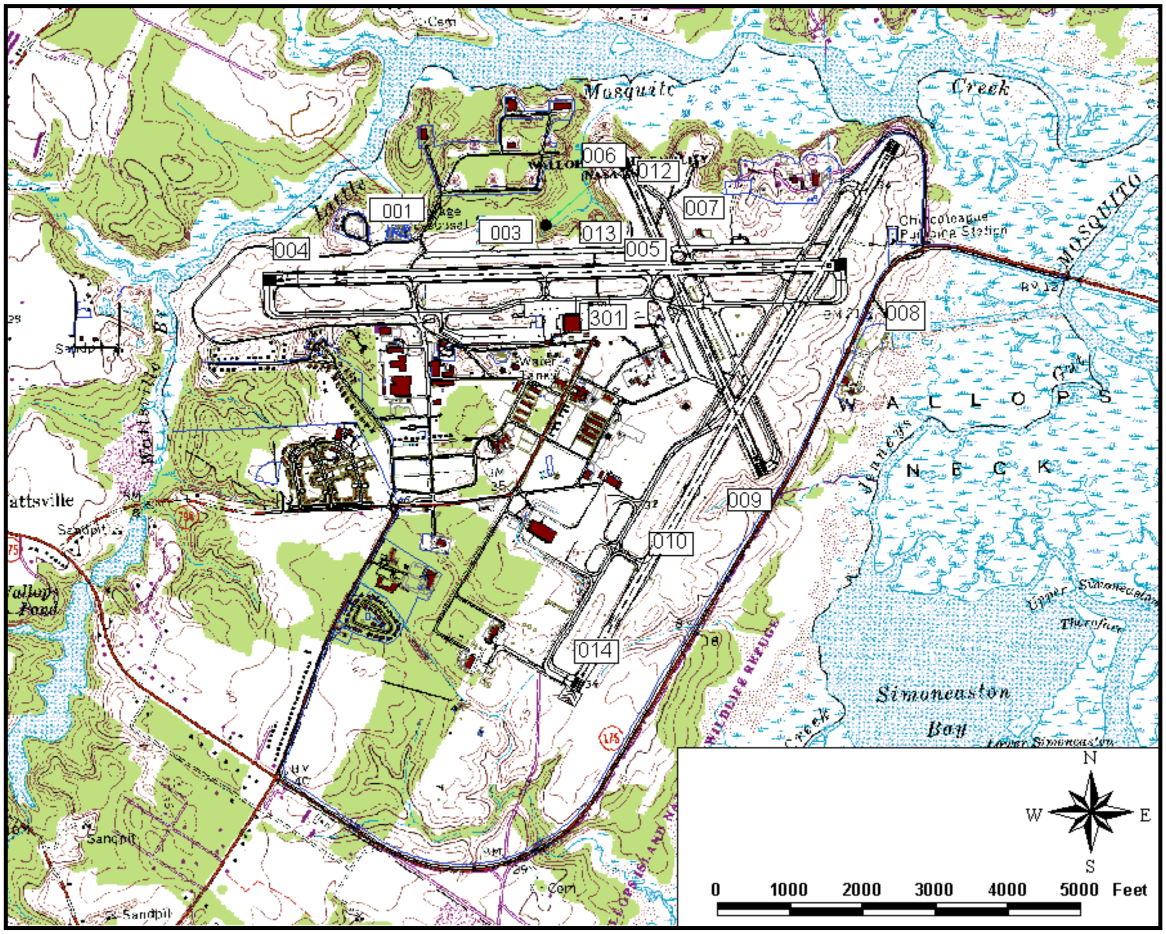
Worst case discharge = (2 tanks x 20,000 gallons x 1.25) x 0.22
Worst case discharge = 11,000 gallons

The D-9A/D-9B AST system is situated approximately 120 feet north and slightly elevated from a storm water inlet.

A second worst case scenario selected is the rupture of either the fuel hose or tank of an aircraft fueling tanker while it is on the apron of the runway. The largest tanker has a capacity of 7,000 gallons (26,500 liters) and a fueling rate of 100 gallons per minute (gpm) or 346 liters per minute (lpm). At regular, grid intervals, storm water inlets are inlaid in the apron of the runway. The inlets are interconnected by the storm water system piping and drain to outfalls around the runway (see Figure 3). Many of these outfalls lead to bodies of surface water. Therefore, if a tanker were to rupture on the apron, a potential release of 7,000 gallons (26,500 liters) of fuel oil could enter the surface waters of the Commonwealth (see Figure 3). In order to confirm this theory, the Environmental Office conducted a simulated spill exercise on the runway apron east of Building N-159. At that time, none of the "spill" reached surface waters. Appendix K details the simulated spill exercise.

Figure 3.

Storm Water Outfalls



6.1 RESPONSE

Wallops Flight Facility has in-house resources to initiate containment and cleanup efforts for either worst case scenario. The Fire Department will respond to the emergency and will initiate standard emergency response protocols. The Fire Department will evacuate personnel from the affected area and evaluate the situation for potential fire hazards. The Fire Department will then initiate containment and cleanup efforts. Based on the topography of the area the general flow direction on the runway should be toward the north or northeast. Storm water drains are inlaid in the apron of the runway in a grid pattern. The Fire Department will use containment devices to inhibit petroleum products from entering the storm water system. Devices to be used include storm drain plugs (liquid impervious barrier mats) and petroleum absorbing materials. To contain the migration of fuel, a backhoe or hand shovels may be used to create a soil berm, if necessary. In the event that fuel enters the storm drain, the Fire Department is prepared to set up underflow dams, filter dams, and floating skimmers at the storm drain outfall to prohibit further migration of petroleum down stream. The Fire Department will contact the Environmental Coordinator as soon as possible for assistance in coordinating activities and to notify the appropriate federal, state, and local authorities within the required timeframe.

6.2 REMEDIATION

After a spill has been contained, cleanup efforts will commence. Any free product outside the containment will be placed in 55-gallon drums and disposed of in accordance with applicable regulations. Any liquid fuel located inside the containment will be pumped into a tanker truck for recycling. If soil or sediments are contaminated, they will be excavated, placed on an impermeable barrier and covered. When excavation is complete, the remaining soil/sediments will be tested to verify the effectiveness of the cleanup efforts. An outside firm will be contracted to recycle the contaminated soil/sediment. If surface water is contaminated, the release will be contained, pumped through an oil/water separator to a vacuum truck, and recycled by an outside contractor. Containment and cleanup efforts will be documented and a post discharge review meeting will be held to assess the discharge response.